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METHOD AND EQUIPMENT FOR CONDUCTING LABORATORY EXPERIMENTS WITH INSECTICIDES FOR THE CONTROL OF INSECTS THAT PUPATE IN THE SOIL

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Laboratory experiments with soil fumigants against plum curculio larvae and pupae in the soil are carried on at Fort Valley, Ga., in boxes (fig. 1) made of 1-inch rough boards, with inside measurements of 1 square yard and 6 inches deep, and equipped with 16-mesh wire cloth lids on hinges; all cracks are puttied and the tops are lined with felt strips to prevent the escape of adult insects. Such boxes would no doubt be satisfactory for similar experiments with other insects. Plum curculio pupation usually takes place within the top 3 inches of soil, and therefore a box 6 inches deep is adequate for experiments with that insect; however, a deeper box would have to be used for insects that pupate under field conditions at a depth in excess of 6 inches.

The boxes are filled with soil, after which 30 bottomless 1" x 4" glass tubes are inserted in the soil, to a depth of about 3½ inches, across the center of each box (fig. 2) for the purpose of determining the stage of development of the insects within each box and to determine the rapidity with which the material under test kills individual larvae or pupae. As each box holds 1 square yard of soil, the material to be tested is applied at a rate of a unit per square yard.

Two full-sized larvae are placed in each bottomless tube, and 750 full-sized larvae are placed on the soil in each box, to make their way into the soil in a normal manner in preparation for pupation. The tubes projecting about one-half inch above and 3 inches into the soil prevent the escape of the individuals from within the tubes and the entrance into the tubes of the larvae placed on the soil outside them. Individual tubes are removed periodically to observe the development of the insects within each box, so that treatments can be made after the larvae construct soil cells in cases where the materials are being tested against larvae in soil cells, after all individuals enter the pupal stage in cases

where the materials are being tested against pupae, or after transformation to adults takes place in cases where the tests are against adults before they leave the soil.

After the box has been treated, the remaining individual tubes are removed at intervals to determine the rapidity of kill from the material under test and for individual mortality records. After the adults begin to emerge, each box is examined daily and the adults are removed and recorded to determine the percentage of mortality of the 750 individuals placed in the box outside of the vials.

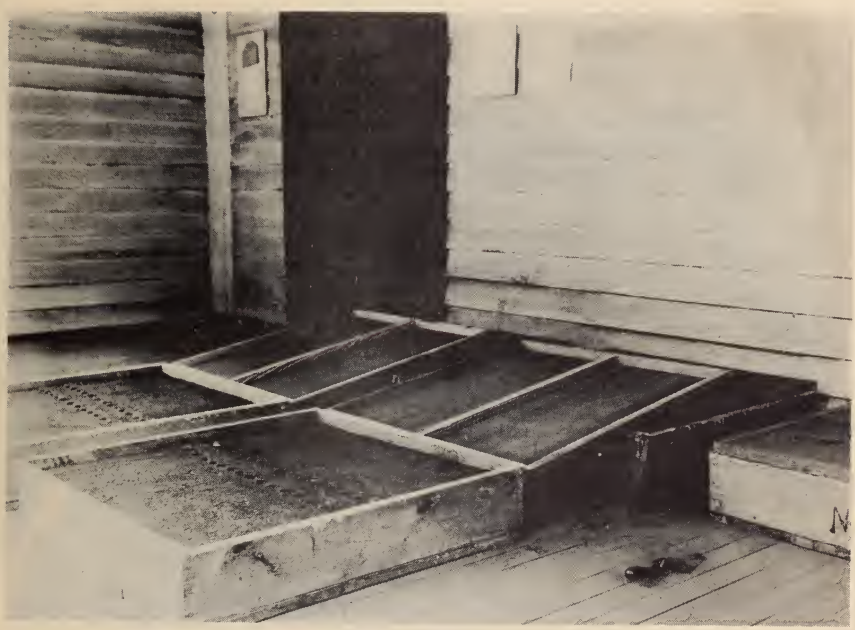

Figure 1.—Boxes for experiments with insecticides against larvae and pupae in the soil.

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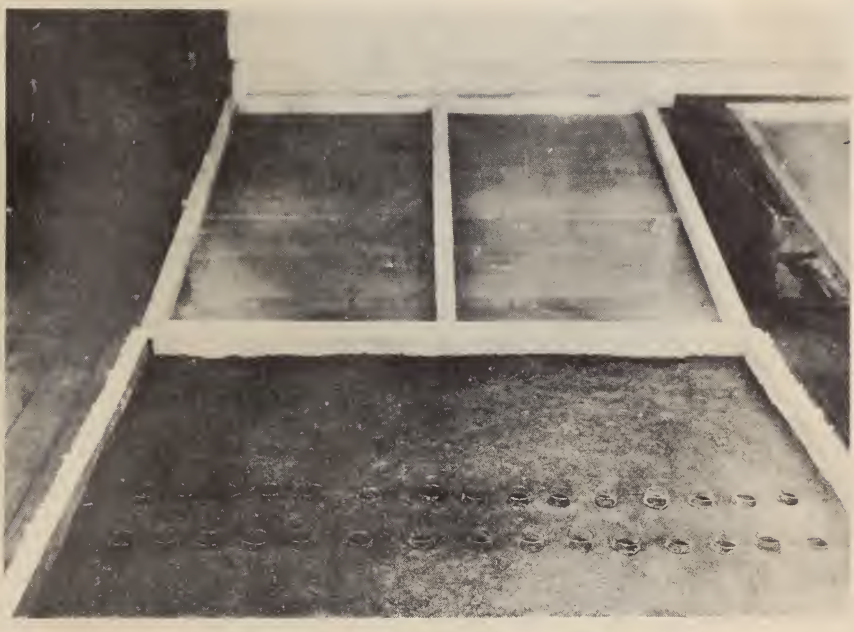

Figure 2.—Box equipped with 30 bottomless glass tubes for individual specimens.

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